

URBAN GLOSSARY

Prepared by AFAC for AFAC Agencies

June 2013



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Preface

The AFAC Urban Glossary has been developed to promote an exchange of information between member agencies on terminology used specifically in the urban environment.

The Glossary includes the urban technical terms, their definition or description as adopted and applied by the AFAC member agencies. It does include some fire terms that are of a general industry wide nature for some completeness. It excludes terms for which an agreed definition could not be reached by the member agencies.

This document is not designed to be a text book or to provide a discussion of a term beyond the definition/description of that term. Nor is it an attempt to modify or redefine terms defined in codes, standards or legislation. Terms that have been adopted for use by the fire management industry from another discipline will maintain the meaning ascribed to them in their originating discipline.

It is proposed that this Glossary will undergo a review regularly to ensure that it continues to be relevant and meets the needs of AFAC member agencies. This version is current as at June 2013.

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Term	Definition
Automatic Sprinkler	A device which distributes water automatically by the release of a valve or plug following a predetermined trigger event, usually from a system of overhead pipes in a building.
Backdraught	Sudden deflagration occurring when additional air is admitted to an oxygen-starved fire (ventilation controlled fire) in an enclosed compartment.
Booster connection	An installation designed to enable the connection of a fire agency pump to a fire sprinkler or fire hydrant system to increase the system's pressure.
Burn building	A multi-compartment structure designed and used for either: 1. Live fire training 2. The conduct of fire research in a controlled environment
Burning regime	The state of a fire having regard to whether it is ventilation controlled or fuel controlled.
Combustible gas	A gas that will burn when it is within its flammability range.
Combustible liquid	A liquid that has a flash point above 61° C.
Combustible metal	A metal capable of burning under certain conditions.
Combustion	Rapid oxidation of fuels producing heat, and often light.
Compartment	An enclosed space with floor, walls and ceiling.
Compartment fire	Fire inside a compartment.
Compartment floor	A fire-resisting floor used in dividing a building into separate compartments.
Compartment wall	A fire-resisting wall used in dividing a building into separate compartments.
Compartmentation	The division of a building into segregated compartments by fire-resisting elements of building construction in order to contain a fire within the compartment of origin.
Concealed space	Space which is hidden behind a false ceiling, floors, wall claddings or under roofs, etc. through which fire can spread undetected.
Conduction (electrical)	The flow of electrical charge from a substance with a higher potential to one with a lower potential.
Conduction (thermal)	Transfer of heat through a material from a region of higher temperature to a region of lower temperature.
Conductor (electrical)	1. A material which offers low resistance to the passage of an electrical current. 2. That part of an electric transmission, distribution of wiring system which actually carries the current.
Conductor (thermal)	A material capable of transferring heat energy by conduction.
Containment	Procedures taken to keep a material in a defined area. Operations designed to restrict fire and stop it spreading to surrounding structures or areas.
Contaminant	A foreign material in or on another substance. (Has particular relevance in emergency service context where introduction of the foreign material poses a threat to life, health, or the environment.)
Contamination	Process of transferring a contaminant from its source to people, animals, the environment, or to equipment, or to other materials that may act as a carrier.
Convection	1. As applied in meteorology, atmospheric motions that are predominantly vertical, resulting in vertical transport and mixing of atmospheric properties; distinguished from advection. 2. Transfer of heat in or by a fluid by the movement of the fluid due to convection currents. Convection currents result from the movement of hot material upwards displacing cooler materials which fall through the fluid.
Critical flow rate	The minimum flow of extinguishing agent needed to suppress a fire.
Decay stage	See: Fire development
Deflagration	Rapid combustion, associated with a flame moving through a gas mixture, generating sub-sonic flame speeds.

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Term	Definition
Density	The ratio of mass of a substance to its volume. It is usually measured at 200C and expressed in kilograms per cubic metre.
Detection system	A system of fixed apparatus, normally part of an automatic fire alarm system, in which fire detectors, control equipment and indicating equipment are employed for automatically detecting fire and initiating other action as arranged.
Detector (fire)	A device which gives a signal in response to a change in the ambient conditions in the vicinity or within the range of a detector, due to a fire.
Detonation	Very rapid combustion, associated with a flame moving through a gas mixture, generating flame speeds at or greater than the speed of sound and intense pressure waves.
Diffusion flame	A flame burning in a mixture of flammable gases and oxygen that are not pre-mixed; mixing of the reactants occurs at the time of reaction.
Direct attack (Urban)	Fire extinguishing method where the extinguishing agent is applied directly onto the burning fuel.
Direct extinguishing	See: Direct attack (Urban)
Door entry	Term often used to describe a procedure used in urban firefighting designed to recognize and mitigate the hazards to crews during entry into a structure.
Emergency warning and intercommunications system (EWIS)	A system to warn occupants and the public of an emergency and acts as a means of communication for building wardens.
Enclosure fire	See: Compartment fire
Endothermic reaction	A chemical reaction in which heat energy is absorbed.
Entrainment	1. The flow of one fluid causing the drawing in of another 2. The movement of air toward the base of the fire
Exothermic reaction	A chemical reaction in which heat energy is released.
Explosion	The phenomenon accompanying a rapid expansion of a gaseous system resulting in a sudden release of energy usually with the generation of high temperatures and pressure. Explosions are categorized as deflagrations if flame front propagates at subsonic speed and detonations if supersonic.
Exposure standards	<p>Airborne concentrations of individual substances which, according to current knowledge, should not cause adverse health effects nor cause undue discomfort to the great majority of workers. Exposure limits are usually expressed as parts per million – ppm – or milligrams per cubic metre – mg/m³ Australian exposure standards are expressed in three forms:</p> <ul style="list-style-type: none"> • Time- weighted average (TWA) • Short term exposure limit (STEL) • Peak Exposure standard - time-weighted average (TWA): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week. Exposure standard - short term exposure limit (STEL): A 15 minute TWA exposure which should not be exceeded at any time during a working day even if the eight-hour TWA average is within the TWA exposure standard. Exposures at the STEL should not be longer than 15 minutes and should not be repeated more than four times per day. There should be at least 60 minutes between successive exposures at the STEL. Exposure standard – peak: A maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period of time which does not exceed 15 minutes. <p>Related terms Threshold limit value (TLV)</p>
Exposures	Parts of the same structure or other structures or property not directly involved in the fire but at risk of being burnt or damaged if the fire is not controlled.
Extinguishing (fire)	Bringing a fire to an end by one or more of the following: starvation, inhibition, smothering, or cooling, achieved by the reduction of fuel, oxygen and temperature.

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Term	Definition
False alarm	Transmission of an unnecessary alarm to a brigade. False alarms may be malicious or due to procedural or system faults.
False ceiling	A ceiling suspended some distance below the original ceiling-either for ornamental or some other reason. It creates an open space through which fire can spread.
Fire alarm	A warning system, usually consisting of fire detectors, connected to a central panel, which alerts occupants and the fire agency to the presence of a fire.
Fire alarm system	A system of fixed apparatus for giving an audible and/or visible or other perceptible alarm of fire and which may also initiate other action.
Fire alarm system, automatic	A fire alarm system comprising components for automatically detecting fire, initiating an alarm of fire and initiating other action as arranged; the system may also include manual call points.
Fire alarm system, manual	A fire alarm system in which the alarm system is initiated manually
Fire Cell	A single compartment structure constructed for the purpose of compartment fire behaviour training or research.
Fire detection system	A system of fixed apparatus, normally part of an automatic fire alarm system, in which fire detectors and control equipment are employed for automatically detecting fire and initiating other action as required.
Fire detector	A device which gives a signal in response to a change in the ambient conditions in the vicinity or within the range of the detector, due to a fire.
Fire development	<p>Following ignition, fire development within a compartment involves several stages and events:</p> <ul style="list-style-type: none"> • Growth Stage: The period from Ignition until all combustible materials in the compartment are involved in fire. • Flashover: The sudden transition between the Growth and Fully Developed stages when flaming rapidly extends throughout (essentially) the whole compartment. • Fully Developed Stage: The stage from when all combustibles within compartment are burning (maximum temperatures reached) until available fuel or oxygen start to diminish and temperatures begin to drop. • Decay Stage: The stage when available fuel or oxygen start to diminish and temperatures start to drop until the fire burns out (or more fuel/oxygen become available).
Fire door	A door that is intended to restrict the spread of fire and smoke into unaffected parts of a building.
Fire gases	Gaseous products of combustion.
Fire growth	The development of a fire from ignition to the point of maximum severity.
Fire hazard	<ol style="list-style-type: none"> 1. Susceptibility of a material to burn 2. The presence of combustible materials 3. A process or activity posing a fire risk if not adequately controlled.
Fire intensity	The rate of energy release by a fire per unit area.
Fire load	The total amount of combustible material - expressed as kilojoules per kilogram or as an equivalent weight of wood.
Fire loss	Damage caused directly by fire expressed in monetary terms..

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Term	Definition
Fire point	Lowest temperature at which a substance gives off enough vapour to ignite upon application of an ignition source, and continues to burn when the source is removed.
Fire resistance	The ability of an element of building construction to withstand the effects of fire for a specified period of time without loss of its fire-separating or load-bearing function or both.
Fire spread	Development and travel of fire across surfaces.
Fire vent	An opening in the enclosing walls or roof of a building, intended for releasing heat and smoke in the event of fire and automatically or manually opened or both.
Fire ventilation	See: Ventilation
Flame acceleration	The relative increase in flame speed due to the generation of turbulence
Flame arrestor	A device for preventing the propagation of flame (usually by quenching) into or out of equipment.
Flame cooling	Direct cooling of the flame zone.
Flame speed	This is the speed with which a flame appears to move relative to a stationary observer.
Flaming combustion	A gas phase combustion reaction with flame propagation; flames occur at the point of reaction between the fuel vapours and oxygen
Flammability	The ease with which a substance is set on fire.
Flammability limits / Flammability range	The range of concentrations, expressed as volume percentage, over which a gas or vapour is flammable
Flammable	Capable of being ignited and of burning with a flame.
Flammable atmosphere	An atmosphere where concentrations of flammable gases or vapours are within the flammable range. This will vary depending on the flammable components present.
Flammable gas	A gas capable of igniting on contact with a source of ignition. (Note: Legislative definitions may be more prescriptive and may across countries)
Flammable limits / Flammable range	See: Flammability limits / Flammability range
Flammable liquid	A liquid having a closed cup flash point not greater than 61°C. (Note: Legislative definitions may be more prescriptive and may across countries)
Flammable solid	A solid substance that is readily combustible and which may cause fire through friction. Substances liable to self-heating and substances which, through the absorption of water, emit flammable gases are akin to flammable solids. (Note: Legislative definitions may be more prescriptive and may across countries)

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Term	Definition
Flammable vapours	The vapours given off by solids and liquids capable of ignition if adequately oxidized.
Flash fire	The rapid propagation of a flame front either without pressure wave or with a negligible pressure wave.
Flashover	See:
Flashpoint	The flashpoint of a liquid is the lowest temperature at which it gives off sufficient vapour to form a flammable mixture with air, so that on the application of a flame, the vapours will flash but will not continue to burn.
Free radicals	Highly reactive atomic or molecular species due to the presence of an unpaired electron - making them more likely to react chemically to achieve a paired set of electrons
Friable material	A material which is easily crumbled or reduced to powder.
Fuel controlled fire	A compartment fire having sufficient oxygen to allow stoichiometric burning; the rate and intensity of burning being controlled by the availability of fuel.
Fuel cooling	Cooling of the surface of a combustible fuel, which reduces the rate of pyrolysis and thus the supply rate of fuel to the flame zone Fully developed stage / Fully developed period See: Fire development
Gas	Substances which need cooling and pressurising to be liquefied, that is they exist in the gaseous state at normal air temperatures and pressures.
Gas cooling	Branch technique where a water fog pattern is applied directly into the heated fire gases to cool them without the excessive production of steam.
Gas phase reaction	A reaction between two or more substances in the gaseous state.
Growth stage or period	See:
Heat flux density (Heat flow rate intensity)	A measure of the rate at which heat energy flows into or out of a surface.
Heat stress	Illness caused by the body overheating.
Heat stroke	A life-threatening condition that develops when the body's temperature-regulating and cooling mechanisms are overwhelmed and body systems begins to fail.
Heat transfer	The process by which heat is imparted from one body to another through conduction, convection or radiation.
High temperature protective clothing	Protective clothing designed to protect the wearer for short-term high temperature exposures. This type of clothing is usually of limited use in dealing with chemicals.
Hydraulic Ventilation	A ventilation technique using the low pressure zone induced at the outside edges of a fog stream to entrain products of combustion and direct them out of a compartment.

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Term	Definition
Ideal Mixture	See: Stoichiometric concentration
Ignition	A process initiating combustion.
Ignition point	The lowest temperature at which a solid gives off sufficient flammable vapour in air to ignite on the application of a small flame.
Ignition source	A source of energy sufficient to initiate combustion.
Ignition temperature	The lowest temperature of a substance at which sustained combustion can be initiated.
Incomplete combustion	Combustion occurring in the absence of sufficient oxygen for stoichiometric burning.
Indirect attack (Urban)	A method of applying water fog onto super-heated surfaces and/or overhead gases in a compartment to create a mass of steam that displaces the oxygen to smother the fire.
Indirect extinguishment	See: Indirect attack (Urban)
Inerting	The replacement of air within a space with an inert gas to prevent or suppress flame.
Inhibit	To make it harder (to burn). An inhibitor is a substance added to combustible materials to retard the process of combustion.
Irritants	Chemicals that may cause local irritation or inflammation on contact with the skin, eyes, respiratory system or digestive tract causing discomfort, shortness of breath, swelling, oedema or bleeding.
Laminar diffusion	When referring to a flame, means that diffusion of the gases during combustion is smooth; without turbulence.
Live fire training	Using any unconfined open flame or device that can propagate fire to the building or other combustible materials as a training aid.
Live hose reel	A hose reel through which water can be pumped, regardless of the amount of hose coiled on the reel.
Lower explosive limit (LEL) Lower flammability limit (LFL)	The concentration of flammable gas, vapour or mist in air, below which an explosive gas atmosphere will not be formed.
Mechanical extraction	See:
Mechanical ventilation	<p>The use of fans to create a pressure differential between a compartment and its surrounds to manage the movement of gases and suspended particulate matter. Mechanical ventilation can utilize either positive or negative pressure.</p> <ul style="list-style-type: none"> • Positive ventilation uses a fan to pressurise a space to force the smoke and heat out. • Negative ventilation involves using a fan or extractor to draw smoke to the outside from the affected (also known as mechanical extraction)

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Term	Definition
Natural ventilation	1. Circulation of a gas(es) within in a space without the application of mechanical assistance or additional energy sources. 2. In structural firefighting, the opening of windows and doors to allow fresh air to circulate through a structure.
Neutral pressure plane	The plane of separation between regions of relatively high and low pressure in a compartment compared to the external pressure. At the neutral pressure plane, the pressure within a compartment is equal to the pressure outside the compartment.
Nozzle	A fitting at the end of a branch to control the size, pattern and/or velocity of water or extinguishing medium being discharged. A detachable nozzle may be fitted to the end of a branch, or the branch and nozzle may be a combined unit.
Overhaul	Extinguishing any remaining pockets of fire not extinguished during the fire attack.
Overpressure	A pressure above that normally occurring in a compartment or space.
Painting	Non-preferred term.
Pencilling	A water application technique where a jet pattern is used to 'lob' water onto the seat/base of the fire without blasting the burning objects around.
Permissible exposure limit	The amount of product a person can be exposed to repeatedly during an 8-hour day/40-hour week with no toxic effects. (Note: Term generally not used within Australia; may be seen in international literature)
Personal protective equipment (PPE)	The equipment provided to shield or isolate a person from the chemical, physical and thermal hazards that may be encountered at an incident. Personal protective equipment includes equipment designed to protect: <ul style="list-style-type: none"> • The body • Respiratory system • Skin • Eyes • Face • Hands • Feet • Head
Piloted-ignition	Ignition dependent upon the introduction of a pilot flame.
Point of origin	The location where a fire started.
Pre-mixed flame	A flame burning through flammable gas and oxygen that have been mixed prior to reaching the reaction zone; usually resulting in more complete combustion – e.g. Bunsen burner
Pressure wave	The movement, through a fluid, of a boundary of relatively high pressure: progress is in the form of a wave front traveling through the fluid.
Pressurisation	The process of increasing the pressure in a compartment higher than the external pressure.
Primary search	A rapid initial search of all safely accessible places in and around a fire (or other hazard) to ascertain the safety of occupants (or exposed persons) undertaken during the early stages of an incident.
Products of combustion	Non-preferred term.

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Term	Definition
Protective clothing	See: Personal protective equipment (PPE)
Pumper	A firefighting vehicle equipped with a large capacity pump, water tank and hose. Generally intended to be operated when stationary, from reticulated or static water supplies.
Pyrolysis	The degradation of an organic substance by heat in the absence of oxygen producing simpler chemical components.
Pyrolyzates	Products of pyrolysis.
Quenching	The cessation of combustion due to either: Heat transfer and mass transfer to the quenching surface, or Aerodynamic effects such as strain fields and rapid mixing.
Quenching distance	The maximum size of opening through which a flame cannot propagate. This distance varies with pressure and for different gases.
Radiation	1. The transfers of energy by electromagnetic waves without the need for an intervening medium. (Heat and light may be transmitted in this way) 2. A reference to the energy emitted by radioactive materials
Radicals	See: Free radicals
Rate of spread	The increase in the perimeter, area, or advance of the fire as a function of time.
Re-ignition	The action of a material that ignites again after it has been extinguished.
Reflection point	The point on the ground where the plume from a fire or a smokestack touches down.
Relative density	Ratio of density of a material to that of a reference material under given standard conditions: <ul style="list-style-type: none"> • For solids and liquids, water is usually the reference material • For gases, the reference material is usually air.
Relay pumping	The practice of using a series of pumps positioned at intervals along a line to share the workload of pumping water over a long distance.
Report of fire	The notification of the detection of a fire to the fire service.
Risk	1. The chance of an event that will have an impact. It is measured in terms of consequences and likelihood. 2. In Emergency risk management - a concept used to describe the likelihood of harmful consequences arising from the interaction of sources of risks, communities and the environment.
Risk analysis	A systematic use of information to determine likelihood and consequences of events.
Salvage	The protection of structures and contents from preventable damage due to weather, smoke, heat, Water and theft.
Secondary search	A search which takes place once the situation is under control or the fire is contained. It is intended to confirm the presence of casualties and account for all known occupants.

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Term	Definition
Size-up	An evaluation of an incident based on all evidence available.
Smoke alarm	A device which is activated by the presence of smoke and sounds an alarm.
Smoke detector	A device which is sensitive to the presence of smoke.
Smoke extractor	A mechanical fan used to remove smoke from a burning building.
Smoke outlets	An opening, or a fire-resisting shaft or duct provided in a building to act as an escape for smoke and hot gases produced by an outbreak of fire.
Smoke vent	See: Vent
Smouldering	Combustion without flame but usually with low level incandescence (glow).
Sprinkler head	An outlet, activated by the heat of a fire, which releases a spray of water in a predetermined pattern over a fire
Sprinkler head	A device fitted to a pipe of a sprinkler system and designed to discharge water in a predetermined pattern over a predetermined area.
Stoichiometric burning / Stoichiometric combustion	Combustion in which all reactants are available in ideal proportions (the stoichiometric concentration) to allow complete conversion: carbon into carbon dioxide(CO ₂), hydrogen to water vapour(H ₂ O), sulphur to sulphur dioxide(SO ₂) etc.
Stoichiometric concentration	The concentration of a fuel in air that will allow complete conversion of all the fuel (full oxidation) and consumption of all oxygen.
Structural fire protection	Those features in the layout and/or construction of a building which are intended to reduce the effects of fire.
Structural firefighters protective clothing	The protective clothing normally worn by firefighters during structural firefighting operations. It includes a helmet, coat, over-trousers, boots, gloves, and a hood to cover parts of the head not protected by the helmet and face piece. [Note: Structural firefighters' protective clothing provides limited protection from heat but may not provide adequate protection from the harmful vapours or liquids that are encountered during dangerous goods incidents.]
Structure fire	Non-preferred term.
Structures	Any building, industrial plant, erection, edifice, wall, chimney, fence, bridge, dam, reservoir, wharf, jetty, earth works, reclamation, ship, floating structure, or tunnelling works.
Surfactant	Chemical additives used to reduce the surface tension of water or other liquids: used in firefighting to improve the spread and penetration of water across and into fuels.
Temperature check	A procedure to ascertain if safe to advance within a compartment: a short pulse of water is directed into the upper layer of hot gases; firefighters look and listen for signs of water falling back down.

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Term	Definition
Thermal layering	The stratification of gases within a fire compartment due to temperature and buoyancy; hottest layer at the top coolest at the bottom.
Threshold limit value (TLV)	A proprietary name for exposure limits published by the American Conference of Governmental Industrial Hygienists as guidelines for occupational exposure; TLVs are frequently referred to many other occupational health and safety bodies. TLV refers to airborne concentrations of substances to which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. Threshold Limit Value - Time Weighted Average (TLV- TWA): The maximum concentration a person can be exposed to repeatedly during an 8-hour day/40 hour week with no toxic effects Threshold Limit Value - Short term Exposure Limit (TLV- STEL): The maximum concentration for exposures of no more than 15 minutes, occurring no more than four times per day with an hour in between each exposure. Threshold Limit Value - Ceiling (TLV-C): The absolute exposure limit that should not be exceeded at any time. Respiratory protection is required when operating in an environment where the TLV -C is likely to be exceeded.
Toxic	Description of the intrinsic property of a substance to adversely affect an organism.
Toxic atmosphere	An atmosphere where concentrations of toxic material are high enough to elicit an adverse health effect, either acute or chronic, from a person.
Toxicity	A measure of the extent to which a substance is able to cause an adverse effect on an organism.
Toxin	A substance that can cause harm to living tissue by chemical activity if inhaled, ingested or absorbed.
Turbulent diffusion	In reference to flaming combustion: the turbulent mixing of the gases during combustion, usually due to one or more of the gases being introduced under pressure.
Upper explosive limit (UEL) / Upper flammability limits (UFL)	The level of concentration of flammable gas, vapour or mist in air, above which an explosive atmosphere will not be formed.
Vapour	1. A substance converted into its gaseous state 2. The evaporative product of volatile liquids.
Vapour density	The ratio of the weight of a given volume of gas compared to air at the same temperature and pressure.
Vapour pressure	The pressure created when a substance evaporates. This is the pressure of the vapour, at any given temperature, in equilibrium with its liquid or solid form. The higher the vapour pressure, the more the substance tends to evaporate.
Vent	An opening in a compartment for the free passage or dissipation of fluids - such as gases, fumes, smoke and the like.
Ventilation	1. The replacement of stale or contaminated air by fresh air. 2. The removal of gases or products of combustion from a compartment. 3. Letting air into a structure through either natural or mechanical means. (For contrast also see: Anti-ventilation)
Ventilation controlled fire	A compartment fire having sufficient fuel and heat to continue to develop; development of the fire is dependent upon (controlled by) the availability of sufficient oxygen.
Vertical opening	Any aperture through floors in buildings, such as lifts, ducting, stairs, services. These openings act as channels for the vertical spread of fire and smoke.
Vitiate	Non-preferred term.

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Term	Definition
Volatile	Able to pass readily into the vapour state.
Volume	The amount of space a substance contains or occupies.
Wetting agent	See: Surfactant

